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**United States Patent** [19][11] **Patent Number:** **6,084,855****Soirinsuo et al.**[45] **Date of Patent:** **Jul. 4, 2000**

[54] **METHOD AND APPARATUS FOR PROVIDING FAIR TRAFFIC SCHEDULING AMONG AGGREGATED INTERNET PROTOCOL FLOWS**

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P. Newman et al., "Flow Labelled IP: A Connectionless Approach to ATM", Proc. IEEE Infocom, Mar. 1996, Ch. 5-6, pp. 1255-1260.

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**[57] ABSTRACT**

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[52] U.S. Cl. .... **370/235**

[58] Field of Search ..... **370/229-235,**  
**370/252, 253, 390, 389, 391, 392, 351-356**

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A method and apparatus is disclosed for providing fair traffic scheduling of L2 connections based on the number of IP flows and a priority coefficient for flow groups in the L2 connection. IP flows are scheduled according to a priority coefficient. The system identifies a number of IP flows for a plurality of connections, assigns a priority coefficient for each of the IP flows and schedules the IP flows according to the priority coefficient. The assignment of a priority coefficient results in a probability  $P_i$  that a data unit belonging to a flow carried over connection  $A_i$  will be selected for forwarding as defined by  $\sigma_i * x_i / \sum (x_1 \dots x_n)$ ,  $i = \{1, 2, \dots n\}$ , where  $x_i$  is the number of flows carried over connection  $A_i$ ,  $\sigma_i$  is the priority and  $n$  is the number of connections. The relationship between the number of flows  $x_i$  and the priority  $\sigma_i$  is defined by  $\sum_{(i=1-n)} (\sigma_i * x_i) / \sum_{(i=1-n)} x_i = 1$ .

**32 Claims, 6 Drawing Sheets**

